

In the claims:

Please enter the following amendments:

Please cancel, without prejudice, claims 15-64.

Please add new claim 71.

1. **(Currently amended)** A method of assigning a sample to a known ~~or putative~~ class, comprising the steps of:
  - a. determining a weighted vote for ~~one of the classes for~~ one or more informative genes for the known class in said sample in accordance with a model built with a weighted voting scheme, wherein the magnitude of each vote depends on the expression level of the one or more informative genes ~~gene~~ in said sample and on the degree of correlation of the one or more informative genes' ~~gene's~~ expression with class distinction; and
  - b. summing the votes to determine ~~the~~ a winning class and a prediction strength, wherein said sample is assigned to the winning class if the prediction strength is greater than a prediction strength threshold.
2. **(Currently amended)** The method of Claim 1, wherein the prediction strength is determined by:
$$(V_{\text{win}} - V_{\text{lose}}) / (V_{\text{win}} + V_{\text{lose}}),$$
wherein  $V_{\text{win}}$  and  $V_{\text{lose}}$  are the vote totals for one or more ~~the~~ winning and losing classes, respectively.
3. **(Original)** The method of Claim 2, wherein the number of informative genes used in the weighted voting scheme is at least 50.
4. **(Original)** The method of Claim 3, wherein the known class is a known disease class.
5. **(Original)** The method of Claim 4, wherein the disease class is a cancer disease class.

6. **(Original)** The method of Claim 5, wherein the cancer disease class is Acute Lymphoblastic Leukemia (ALL) or Acute Myeloid Leukemia (AML).
  
7. **(Currently amended)** The method of Claim 6, wherein the informative genes correlate with genes encoding expression products that are is selected from the a group consisting of: ~~Cc-myb~~, ~~Proteasome~~ proteasome ~~iota~~, MB-1, ~~Cyclin~~ cyclin, ~~Myosin~~ myosin light chain, Rb Ap48, SNF2, HkrT-1, E2A, ~~Inducible~~ inducible protein, ~~Dynein~~ dynein light chain, ~~Topoisomerase~~ topoisomerase II  $\beta$ , IRF2, TFIIE $\beta$ , ~~Acyl-Coenzyme~~ acyl coenzyme- A[,] dehydrogenase, SNF2, ATPase, SRP9, MCM3, ~~Deoxyhypusine~~ deoxyhypusine synthase, Op 18, ~~Rabaptin~~ rabaptin-5, ~~Heterochromatin~~ heterochromatin protein p25, IL-7 receptor, ~~Adenosine~~ adenosine deaminase, ~~Fumarylacetoacetate~~ fumarylacetoacetate, ~~Zyxin~~ zyxin, LTC4 synthase, LYN, HoxA9, CD33, ~~Adipsin~~ adipsin, ~~Leptin~~ leptin receptor, ~~Cystatin~~ cystatin C, ~~Proteoglycan~~ proteoglycan 1, IL-8 precursor, ~~Azurocidin~~ azurocidin, p62, CyP3, ~~MCL1~~ myeloid cell differentiation protein, ATPase, IL-8, ~~Cathepsin~~ cathepsin D, ~~Lectin~~ lectin, MAD-3, CD11c, Ebp72, ~~Lysozyme~~ lysozyme, ~~Properdin~~ properdin and ~~Catalase~~ catalase.
  
8. **(Original)** The method of Claim 1, wherein the known class is a class of individuals who respond well to chemotherapy or a class of individuals who do not respond well to chemotherapy.
  
9. **(Currently amended)** A method of determining a weighted vote for an informative gene to be used in classifying a sample to be tested, comprising:
  - a. determining a weighted vote for a known class ~~one of the classes~~ for one or more informative genes in said sample, wherein the magnitude of each vote depends on the expression level of the one or more genes ~~gene~~ in said sample and on the degree of correlation of the one or more genes' ~~gene's~~ expression with class distinction; and
  - b. summing the votes to determine the weighted vote for the known ~~winning~~ class.

10. **(Currently amended)** The method of Claim 9, wherein the weighted vote is determined according to:

$$V_g = a_g(x_g - b_g),$$

wherein  $V_g$  is the weighted vote of the gene,  $g$ ;  $a_g$  is the correlation between gene expression values and class distinction;  $b_g = (\mu_1(g) + \mu_2(g)) / 2$  which is the average of the mean  $\log_{10}$  expression value in a first class and a second class;  $x_g$  is the  $\log_{10}$  gene expression value in the sample to be tested; and wherein a positive  $V$  value indicates a vote for the first class, and a negative  $V$  value indicates a vote for the second class.

11. **(Original)** The method of Claim 10, wherein the vote for the first class is determined by obtaining a sum of the absolute values of the positive votes for the first class, and the vote for the second class is determined by obtaining a sum of the absolute values of the negative votes for the second class.

12. **(Currently amended)** The method of Claim 11, wherein the weighted vote is determined ~~by determined~~ a portion of genes that are relevant for determining the classes.

13. **(Original)** The method of Claim 12, wherein a signal to noise routine, a Pearson correlation routine, or a Euclidean distance routine determines the relevant genes.

14. **(Currently amended)** The method of Claim 13, wherein the signal to noise routine is:

$$P(g,c) = ((\mu_1(g) - \mu_2(g)) - ((\sigma_1(g) + \sigma_2(g))),$$

wherein  $g$  is the gene expression value;  $c$  is the class distinction,  $\mu_1(g)$  is the mean of the expression levels for  $g$  for the first class;  $\mu_2(g)$  is the mean of the expression levels for  $g$  for the second class;  $\sigma_1(g)$  is the standard deviation for the first class; and  $\sigma_2(g)$  is the standard deviation for the second class.

- 15-64. **(Cancelled)**

65. **(Withdrawn)** The method of Claim 5, wherein the cancer disease class is glioblastoma or medulloblastoma.

66. **(Withdrawn)** The method of Claim 5, wherein the cancer disease class is follicular lymphoma or diffuse large B cell lymphoma.
67. **(Withdrawn)** The method of Claim 18, wherein the cancer is a brain tumor.
68. **(Withdrawn)** The method of Claim 67, wherein the brain tumor is medulloblastoma or glioblastoma.
69. **(Withdrawn)** The method of Claim 18, wherein the cancer is Non-Hodgkin's lymphoma.
70. **(Withdrawn)** The method of Claim 69, wherein the lymphoma is follicular lymphoma or diffuse large B cell lymphoma.

Please add the following new claims:

71. **(New)** A method of assigning a sample to a previously unknown, putative class, comprising the steps of:
- a. determining said previously unknown, putative class using a clustering routine;
  - b. determining a weighted vote for one or more informative genes for the putative class in said sample in accordance with a model built with a weighted voting scheme, wherein the magnitude of each vote depends on the expression level of the one or more informative genes in said sample and on the degree of correlation of the one or more informative genes' expression with class distinction; and
  - c. summing the votes to determine a winning class and a prediction strength, wherein said sample is assigned to the winning class if the prediction strength is greater than a prediction strength threshold.